

IN THE CLAIMS:

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1. (Cancelled)

2. (Currently Amended) A method ~~as recited in claim 1, wherein the step of validating~~  
comprises for validating establishment of at least one IP communication tunnel, the  
method comprising:

sending an IP packet on the communication tunnel with a predetermined value in a  
Time-To-Live field such that an ICMP message is generated within said tunnel in  
response to said value of said Time-To-Live field;

receiving ~~an~~ said ICMP message ~~generated by the network in response to the sent IP~~  
~~packet;~~ and

examining the contents of the ICMP message to validate that the transformations were  
done properly.

3. (Currently Amended) A method for validating establishment of at least one IP  
communication tunnel, the method comprising ~~as recited in claim 1, wherein the step of~~  
~~validating comprises:~~

establishing a network device level socket at the originator that examines all packets  
passing through a selected network device;

sending an IP packet on the communication tunnel;

receiving a copy of the IP packet from the device level socket after the transformations have been applied; and

examining the contents of the copy to validate that the transformations were done properly.

4. (Currently Amended) A method for validating establishment of at least one IP communication tunnel, the method comprising as recited in claim 1, wherein the step of validating comprises:

establishing a dummy interface at originator with the address of a participant in the tunnel;

sending an IP packet on the communication tunnel to the participant;

receiving the IP packet from the dummy interface after the transformations have been applied; and

examining the contents of the packet to validate that the transformations were done properly.

5. (Original) A method as recited in claim 1, wherein the IP communication tunnel uses Generic Routing Encapsulation as the transformation.

6. (Currently Amended) A method for validating establishment of at least one IP communication tunnel, formed on a portion of a route between a first end-station and a

second end-station, the method comprising as recited in claim 1, with the step of validating includes:

configuring a router to form a filtering agent on said tunnel to filter a subset of packets generated within said first end-station;

generating IP packets in said first end-station with markings on the communication tunnel;

returning filtered packets from said filtering agent in said router to said first end-station and

examining the filtered packets generated by said first end-station, having said markings and returned by said filtering agent to validate that the transformation has been done properly.

7. (Original) A method as recited in claim 6, used for validation of a partial route transformation.

8. (Currently Amended) A method as recited in claim  $\pm 2$ , wherein the IP communication tunnel uses the IP-security protocols established using the Internet Key Exchange.

9. (Currently Amended) A method as recited in claim  $\pm 2$ , wherein the IP communication tunnel uses IP compression as the transformation.

10. (Currently Amended) A method as recited in claim 1, wherein the IP communication tunnel uses network address translation as the transformation.

11. (Currently Amended) A method for validating establishment of an IP communication tunnel, the method comprising:

validating that transformations from an originator of a validation process have been established properly by invoking a validation client on said originator, that tests and verifies that packets originating on said originator have been properly transformed;

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after successful validation in the previous step, requesting that at least one other participant in the tunnel validate that the transformations from that participant have been established properly by invoking a validation client on said other participant, that tests and verifies that packets originating on said other participant have been properly transformed; and

verifying that the other participant in the tunnel can communicate with the originator of the validation process.

12. (Canceled)

13. (Original) An apparatus for validating establishment of IP communication tunnels as recited in claim 6, further comprising a remote party transformation validator for validating that at least one participant in the tunnel performs the transformation properly.

14. (Currently Amended) An article of manufacture comprising a computer usable medium having computer readable program code means embodied therein for causing validation of establishment of at least one IP communication tunnel, the computer readable program code means in said article of manufacture comprising computer readable program code means for causing a computer to effect the steps of claim  $\pm$  2.

15. (Currently Amended) A computer program product comprising a computer usable medium having computer readable program code means embodied therein for causing validation of establishment of at least one IP communication tunnel, the computer readable program code means in said computer program product comprising computer readable program code means for causing a computer to effect the steps of claim  $\pm$  2.

16. (Currently Amended) A program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for validating establishment of at least one IP communication tunnel, said method steps comprising the steps of claim  $\pm$  2.

17. (Original) An article of manufacture comprising a computer usable medium having computer readable program code means embodied therein for causing validation of establishment of at least one IP communication tunnel, the computer readable program code means in said article of manufacture comprising computer readable program code means for causing a computer to effect the steps of claim 11.

18. (Original) A computer program product comprising a computer usable medium having computer readable program code means embodied therein for causing validation of establishment of at least one IP communication tunnel, the computer readable

program code means in said computer program product comprising computer readable program code means for causing a computer to effect the steps of claim 11.

19. (Original) A program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for validating establishment of at least one IP communication tunnel, said method steps comprising the steps of claim 11.

20. (Currently Amended) A computer program product comprising:

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a computer usable medium having computer readable program code means embodied therein for causing validation of establishment of at least one IP communication tunnel, the computer readable program code means in said computer program product comprising:

computer readable program code means for causing a validating computer to effect the functionality of a transformation validator as specified in claim 4, for validating that the transformations from an originator of the validation process has been done properly; and

computer readable program code means for causing the validating computer to effect the functionality of a communication validator for validating that at least one participant in the tunnel can communicate with the originator.

21. (Original) A computer program product recited in claim 20, wherein the computer readable program code means further comprises computer readable program code means for causing the computer to effect the functionality of a remote party transformation

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validator for validating that at least one participant in the tunnel performs the transformation properly.

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